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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/508,945	10/01/2004	Sumie Suda	259727US0XPCT	7750
22850	7590	01/21/2009		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER YEE, DEBORAH	
			ART UNIT	PAPER NUMBER
			1793	
			NOTIFICATION DATE	DELIVERY MODE
			01/21/2009	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/508,945	<b>Applicant(s)</b> SUMIE SUDA ET AL.	
	<b>Examiner</b> Deborah Yee	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 December 2008 and 28 October 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 11-14, 43-46 and 48-50 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-14, 43-46 and 48-50 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 October 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 1, 2008 has been entered.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 11 to 14, 43 to 46 and 48 to 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese patent 7-90495 ("JP-495") in view of US Patent 6,645,319 ("Nagao") or Japanese patent 08-120407 ("JP-407") for the reasons set forth in the previous offices dated January 30, 2008 and July 31, 2008.

### ***Response to Arguments***

4. Applicant's arguments filed October 28, 2008 have been fully considered but they are not persuasive.

5. JP-495 discloses steel wire containing 0.7-1.0 wt% C, 1.0 wt% or less of Si and 0.05-1.0 vol. % of carbide of % V or Nb having a size of 0.1  $\mu\text{m}$  or less. JP-495

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discloses that C less than 0.7% causes deterioration to strength and the size of V and Nb carbide at more than 0.1  $\mu\text{m}$  impairs workability.

6. Applicant argued that JP-495 fails to suggest the limitations of independent claim 1 wherein a "hard-drawn steel wire comprising: **C: 0.5 -0.68 mass%...., Si: 1.2-1.95%....**, said wire....further comprising 5 particles/ 100  $\mu\text{m}^2$  or less of carbides wherein the circle-equivalent **diameters of the carbides are more than 0.1  $\mu\text{m}$ .**

7. In response to argument, it is the Examiner's position that inventive steel containing C content at no more than 0.68% C fails to define patentable novelty over JP-495 steel whose lower C limit is 0.7% because they closely approximate each other such that one skilled in the art would have expected them to have similar properties and there is nothing to show (e.g. by comparative test data) that 0.68%C is of any patentable significance. Note Applicant's specification on page 4 teaches a preferred upper limit of 0.68%C but a broad upper limit of 0.7%C is permissible.

8. Moreover, it is well known in the art that C is an effective element for ferritic-pearlitic steel wire to increase strength but toughness and ductility can be compromised with higher C levels; see computer-generated English translation of JP-495 in paragraph [0008] and Nagao on lines 46 to 61 in column 3. Also similar to the prior art teaching, Applicant's steel can contain at most 0.7% C to enhance strength but excessive C can cause cracking (equivalent to reduction in toughness) and reduce fatigue life and sag resistance, see first paragraph on page 4 of instant specification. Since Applicant has not demonstrated 0.68% C to be somehow critical and productive of new and unexpected results, then the difference between 0.68% C verses 0.70% C

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would be a matter of routine optimization of an alloying constituent to achieve the desired balancing of known properties (strength and toughness).

9. The argument to C content, also applies to Si content. Inventive claim recites a lower limit of 1.2% Si which fails to define patentably novelty over prior art upper limit of 1.0% Si since they closely approximate each other. The slight difference in proportion of element would not be a patentable significance since there is nothing to show that it is critical and productive of new and unexpected results. Note Applicant's specification on page 4 teaches a preferred lower limit of about 1.2% Si yet a broad range of 1 to 1.95% is permissible.

10. In addition, JP-495 in paragraph [0009] teaches adding Si for solid solution strengthening but excessive amounts exceeding 1.0% compromises toughness. Similarly, page 4 of instant specification teaches Si acts as a solid solution strengthener but excessive amounts greater than 1.95% deteriorates toughness and ductility. Since Applicant has not demonstrated 1.2%Si to be somehow critical and productive of new and unexpected results, then the difference between 1.2%Si verses 1.0%Si would be a matter of routine optimization of an alloying constituent to achieve the desired balancing of known properties (strength and toughness).

11. Applicant refers to test data in tables 1 and 2 of the instant specification to demonstrate the criticality of the claimed C and Si ranges by disclosing comparative examples containing C and Si outside the claimed ranges having inferior sag resistance and fatigue strength over present invention steel. It is the examiner's position that test data is not effective to distinguish claims over prior art because criticality of the end

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points for C and Si ranges have not been established. For instance, Applicant's comparative test examples E and F contain 0.25% Si yet JP-495 teaches an upper Si limit of 1.0%. Hence the criticality of 1.0% Si verses 1.2%Si has not been demonstrated. Similarly comparative example G contains 0.80% C yet JP-495 teaches a lower limit of 0.70. Hence the criticality of 0.7% C verses 0.68% Si has not been demonstrated.

12. With regard to carbides, JP-495 teaches 0.05-1.0 vol. % of carbide of V or Nb having a size of 0.1  $\mu\text{m}$  or less which would meet the claimed limitation 5 particles/ 100  $\mu\text{m}^2$  **or less** of carbides wherein the circle-equivalent diameters of the carbides are more than 0.1  $\mu\text{m}$ . Although Applicant's limitation tolerates carbides having a size of more than 0.1 $\mu\text{m}$ , it still has a lower limit of zero by reciting "**or less**". Therefore carbides at > 0.1  $\mu\text{m}$  need not be present in Applicant's steel and would not patentably distinguish over JP-495. In addition, the goal of present invention and JP-495 are very similar since they both teach away from high density of coarse carbides in order to achieve high strength, toughness and ductility.

13. Also since steel of JP-495 is processed in the substantially the same manner as recited by claim 50 to form carbides comprising the steps of hot rolling, patenting treatment wherein heating occurs at austenitizing temperature at 950-1200°C (over claimed range of 880-950°C) and isothermally transforming at a temperature range of 650-500°C (overlaps claimed range of 550 to 650°C), then claimed carbide limit would be expected.

14. For the above reasons, claims would not patentably distinguish over prior art.

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15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deborah Yee whose telephone number is 571-272-1253. The examiner can normally be reached on monday-friday 6:00 am-2:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Deborah Yee  
Primary Examiner  
Art Unit 1793

/DY/